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ABSTRACT

Described is a basic course in whole numbers involving a laboratory approach with emphasis on applications, designed for the student whose arithmetic skills need reinforcing. After lists of overall goals, scope, and performance objectives, the guide gives suggested strategies, materials, and references for 41 topics arranged under seven headings. Also included is a sample test and a bibliography of state-adopted and other textbooks. (MM)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

Mathematics: WHOLE NUMBER ACTION 5211.01

DADE COUNTY PUBLIC SCHOOLS

DIVISION OF INSTRUCTION • 1971

QUINMESTER MATHEMATICS

COURSE OF STUDY

FOR

WHOLE NUMBER ACTION

5211.01

(EXPERIMENTAL)

Written by

Gilberto J. Cuevas
Edward I. Golden

for the

DIVISION OF INSTRUCTION
Dade County Public Schools
Miami, Florida 33132
1971-72

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PREFACE

The following course of study has been designed to set a <u>minimum standard</u> for student performance after exposure to the material described and to specify sources which can be the basis for the planning of daily activities by the teacher. There has been no attempt to prescribe teaching strategies; those strategies listed are merely suggestions which have proved successful at some time for some class.

The course sequence is suggested as a guide; an individual teacher should feel free to rearrange the sequence whenever other alternatives seem more desirable. Since the course content represents a <u>minimum</u>, a teacher should feel free to add to the content specified.

Any comments and/or suggestions which will help to improve the existing curriculum will be appreciated. Please direct your remarks to the Consultant for Mathematics.

All courses of study have been edited by a subcommittee of the 1970-71 Mathematics Advisory Committee.

CATALOGUE DESCRIPTION

A basic course in whole numbers involving a laboratory approach with emphasis on applications.

Designed for the student whose arithmetic skills need reinforcing.

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KEY TO ABBREVIATIONS
(*state adopted)

EM(A) - Collins, Elizabeth; Nanney, J. Louis; and Rickey, Agnes. Experiencing Mathematics A. New York: L. W. Singer Co., 1967.

EM(B) - Collins, Elizabeth; Nanney, J. Louis; and Rickey, Agnes. Experiencing Mathematics B. New York: L. W. Singer Co., 1967.

EM(C) - Collins, Elizabeth; Nanney, J. Louis: and Rickey, Agnes. Experiencing Mathematics C. New York: L. W. Singer Co., 1967.

*SRA(1) - Denholm, Richard A. and Blank, V. Dale. Mathematics Structure and Skills, 1st Book. Chicago: Science Research Associates, 1968.

*BMM(I) - Eicholz, Robert; O'Daffer, Phares; Brumfiel, Charles; and Shanks, Merrill. Basic Modern Mathematics I. Palo Alto: Addison-Wesley Publishing Co., Inc., 1965.

AT - Arithmetic Teacher. The National Council of Teachers of Mathematics.

EIMI(I)
EIMI(II) - Experiences in Mathematical Ideas, Volumes I and II. The National Council of Teachers of Mathematics, 1970.

RA - Stein, Edwin I. Refresher Arithmetic. Boston: Allyn and Bacon, Inc., 1965.

*XN(A)
*XN(B)
*XN(C) - Crouch, William H. Coordinated Cross-Number Puzzles. Books A, B, C. Cincinnati: McCormick-Mathers Publishing Co., Inc., 1969.

*ML - Tucker, Sue and Wheeler, Joydene. The Mathematics Laboratory. Cincinnati: McCormick-Mathers Publishing Company.

*IMD - Suppes, Patrick; and Jerman, Max. Individualized Mathematics: Drill and Practice Kits AA, BB, CC, DD. New York: The L. W. Singer Company, Inc., 1969.

OVERALL GOALS

To give the student a background in whole numbers in the general areas of:

1. Place value and order
2. Basic operations
3. Problem solving
4. Measurement

To help the student to realize that the set of whole numbers is not adequate for the solution of problems in everyday life.

To prepare the student for continued study in general mathematics courses.

SCOPE

I. The set of whole numbers
   - A. Ordering
   - B. Comparing
   - C. The number line

II. Place value
   - A. Graphic representation
   - B. Chart
   - C. Rounding

III. Reading and writing numbers
   - A. From words to numerals
   - B. From numerals to words

IV. Operations
   - A. The four operations with 1 and 2 digit numbers
   - B. One and two step problems with 2 digit numbers
   - C. The four operations with numbers of 3 digits or more
   - D. Rounding answers
   - E. One and two step problems with large numbers
   - F. Estimating answers

V. Linear measurement
   - A. Units
     1. Inch
     2. Half-inch
     3. Foot
     4. Yard
   - B. To the nearest unit

PERFORMANCE OBJECTIVES

The objectives listed represent the minimum expectations for a student's performance at the end of the nine week period.

The student will (with multiplication tables provided when desired)

1. Specify the place value of any digit of a whole number of six digits or less.

2. Translate the numerical notation of any whole number of six digits or less into the equivalent verbal form.

3. Translate a verbal expression of any whole number of six digits or less into the equivalent numerical notation.

4. Round any whole number of six digits or less to a specified unit of place value.

5. Find the sum of any five whole numbers of three digits or less using vertical format.

6. Change to vertical format and find the sum of any five whole numbers (three digits or less) given in a horizontal format.

7. Subtract any two whole numbers of five digits or less using vertical format.

8. Change to a vertical format and subtract any two whole numbers (five digits or less) given in a horizontal format.

9. Multiply any two whole numbers of three digits or less.

10. Divide any whole number of two to four digits by any whole number of one or two digits.

11. Estimate the solution to problems involving operations with whole numbers.

12. Solve two-step verbal problems involving skills with whole numbers described in objectives 1-10.

13. Create verbal problems when given data involving whole numbers and specified operations.

14. Measure, to the nearest whole number of inches, the length of an object.

SEQUENCE, STRATEGIES, SOURCES

1. Number line (introduction, order, uniformity)

The use of the number line cannot be overly emphasized.

Students should recognize

that A > B if A is to the right of B on the number line.

that B < A if B is to the left of A on the number line.

SRA(1) is an excellent source.

Youngsters usually enjoy a race. Use simple quizzes with shorter time allowance in successive tries to help the student use > and < with ease.

References
(*state adopted)

	*SRA(1)	*BMM(I)	EM(A)	EM(C)	AT
pages	5-15	24,25, 32	8,9	44	Nov. '69 575

Sequence, Strategies, Sources (continued)

2. Measuring

Rulers marked by the inch or half-inch may be constructed by student from pre-cut strips of poster board) are most desirable for measuring to the nearest unit.

Sets of objects to be measured should be located at various "stations." It is not necessary that every student measure every object. Some objects to be measured might include:

- Various rectangles - length, width, diagonal (observe what happens to the diagonal when length, width or both are increased.)
- Various discs - diameter, circumference (use string to measure circumference.)
- Boxes - length, width, depth, diagonals.
- Cylinders (tin cans) - circumference, diameter, height

This is a good topic for reinforcing skills in itemizing and chart-making. Students will need help in setting up titles on charts.

Use a stop watch to measure time versus distance; for instance, roll a hand ball at several rates across a previously measured track. Develop charts for time and distance yielding speed.

Use a plane (with a waxed surface) inclined at different angles; without initial momentum, slide an object down the plane. Record time versus angle or height of one end of the plane.

Useful Materials

- Pre-cut strips of poster board (various sizes to be measured)
- Cardboard boxes with diagonals drawn on the sides and bottom
- Pre-cut rectangles
- Discs with a diameter shown
- Stop watch
- Inclined plane - waxed so different objects will slide easily
- String
- Empty tin cans
- Construction paper

Sequence, Strategies, Sources (continued)

3. Translating verbal expressions to numerical notation

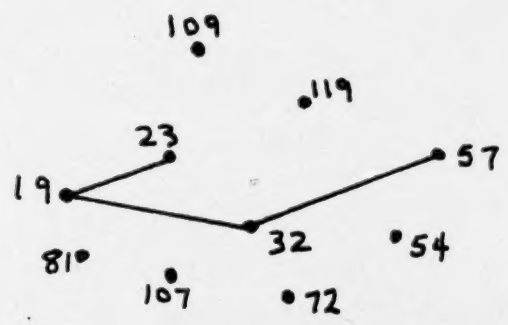
Matching exercises make a good beginning

etc.

Play bingo! For the random-selection set, use cards with the numbers written in words; student cards will have the numerals to match.

Make a dot-to-dot diagram such as:

Steps:
1. twenty-three
2. nineteen
3. thirty-two
4. fifty-seven
   etc.



From a set of cards with numbers written in verbal form, student translates into numerical form and places the numerals on a number line.

References
(*state adopted)

	*BMM(I)	EM(A)	*SRA(1)	XN(B)
pages	10,11	28,31,33	15-19	20-21

Sequence, Strategies, Sources (continued)

4. Translating numerical notation to verbal expression

A maze could be constructed with the starting point being the numerical expression and the correct path leading to the verbal expression.

Only after developing familiarity with the spelling should an attempt be made to have the student write the verbal form of the orally presented numeral.

If students have trouble with the above, begin by reading the name of the numeral aloud and have the students match what they hear with the correct written form (which they should have on a sheet in front of them).

A crossnumber puzzle using the verbal expression is a good reinforcer after spelling and concepts have been mastered.

References
(*state adopted)

	*BMM(I)	EM(B)	*SRA(1)
pages	10	2	15-19

Sequence, Strategies, Sources (continued)

5. Place value

Useful materials:

Flash cards with numbers written in different ways (verbally, expanded notation, etc.)

Student worksheets with five or six rows containing only

hundred thousands	ten thousands	thousands	hundreds	tens	ones

Each student should make up a set of cards 2" x 2" on which is written a single digit from zero to nine, each digit appearing on 6 cards, making 60 cards to a set. Any number up to 6 digits can then be illustrated with his cards. These cards can be used in a variety of exercises involving place value. For instance, try a game.

Building a Number

Each student should draw the following chart:

hundred thousands	ten thousands	thousands	hundreds	tens	ones

In a shoebox place ten cards with the numbers 0 to 9 on them (one number on a card). The leader chooses a card, calls out the number, and replaces the card. Students may write this number in any box on their chart. This is continued for 6 draws. The student with the largest or smallest number (according to directions) is the winner.

References
(*state adopted)

	*SRA(1)	*BMM(I)	EM(A)	AT	
pages	217-220	1-11 17 72-73	26-27 30,32 40,45,55	April,'69 249 Dec.,'70 683	
	RA	*XN(A)	*XN(C)	EM(B)	EM(C)
pages	7-9	10-13	34	20	42

Sequence, Strategies, Sources (continued)

6. Rounding numbers and measurements

Use a number line to show that rounding changes the number to the nearest <u>whole</u> unit.

Using a stopwatch for various activities, have students round to nearest second.

It may be necessary to discuss the relationship between minutes and seconds. A large model of a stopwatch with movable hands will help the student to learn to read the watch.

More measurement activities are appropriate here. Use rulers with several different markings; those made by students from pre-cut poster board are especially useful.

<u>References</u>
(*state adopted)

	*BMM(I)	EM(B)	RA
pages	143	30,32	10-11

Sequence, Strategies, Sources (continued)

7. Operations: adding 2 one-digit numbers that do not add up to 10.

See EIMI(1) for experiences in renaming numbers in addition; the activities in this unit have a high interest level.

Magic addition boxes can be used:

+		
3	2	5
1	2	3
4	4	8

Use only the appropriate segment of the addition table. Have blank ½" squared paper on hand to make it easier for students to make their own tables.

+	0	1	2	3	4	5	6	7	8	9
0					4					9
1	1								9	
2				5				9		
3							9			
4				7		9				
5		6			9					
6				9						
7			9							
8		9								
9	9									

Cross-number puzzles can be used effectively.

Chapter 2 in SRA(1) contains good ideas for designing worksheets.

References
(*state adopted)

	*BMM(I)	EM(A)	RA	*SRA(1)	*XN(A)	EIMI(1)
pages	28,329	2-5,8-9	13	36-57	1	35-65

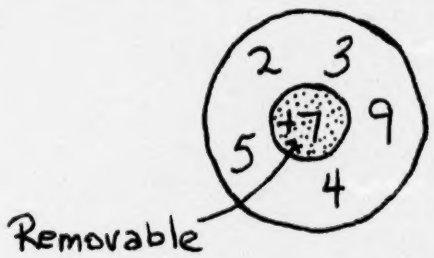
Sequence, Strategies, Sources (continued)

8. Operations: adding 2 one-digit numbers that add up to more than 10

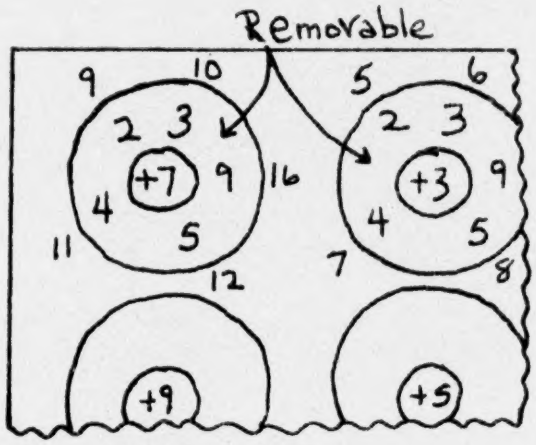
Use the section of an addition table that is appropriate.

Open-ended problems such as: aid student in developing understanding of the concept of "15."

"Donut-Drill" can be devised in several ways. Poster board "donuts" can be used in small group or large group activities. The removable portion can be replaced by other discs with other numbers (as well as other operations).



Another possibility is to prepare worksheets with the number given in the center. The student will then draw from a collection, put the "donut" in place and write the sums around the outside.



Drill exercises may be found in either McCormick-Mathers' The Mathematics Laboratory or Singer's Individualized Mathematics: Drill and Practice Kits.

Do not overlook verbal problems: one or two a day provide for a gradual development and are not so apt to cause a student to be frustrated.

References
(*state adopted)

	*BMM(I)	RA	*SRA(1)	*XN(A)
pages	28,329 42-43	13	36-57 63-65	4-5

Sequence, Strategies, Sources (continued)

9. Operations: adding a two-digit and a one-digit number that add up to less than 100

A quick review of the meaning of place value may be needed to explain the method of adding in columns.

If a student is having extreme difficulty remembering addition facts, it may be wise to allow him to use a mechanical device (table, hand counter, adding machine, etc.) to get the correct answer.

Return to measurement for physical problems, such as finding perimeters of rectangles and triangles.

10. Operations: introduce estimating

From this stage on, students should be encouraged to guess (i.e. estimate) the answer to most problems prior to calculation.

Estimating distance in feet or inches followed by measuring is a productive activity.

References
(*state adopted)

	*BMM(I)	*SRA(1)	EM(C)
pages	332	47-57 63-65 70-78 198-201	46

11. Operations: adding 2 two-digit numbers

Estimate answer by rounding addends to nearest ten prior to calculating.

Expanded notation may be needed if this work seems difficult to the student. For example

$$\begin{array}{rcl} 25 & = & 2 \times 10 + 5 \times 1 \\ \underline{47} & = & \underline{4 \times 10 + 7 \times 1} \\ & & 6 \times 10 + 12 \times 1 \\ & & 6 \times 10 + 1 \times 10 + 2 \times 1 \\ 72 & = & 7 \times 10 + 2 \times 1 \end{array}$$

12. Adding 2 three-digit numbers

Estimate answer by rounding addends to nearest 100 and/or nearest 10 prior to calculating.

Verbal problems created by the student improve his ability to communicate. Ask for problems which have a certain solution and require certain skills, such as the adding of 2 three-digit numbers with the result equal to 29. Care should be taken that spelling and grammar are corrected.

References
(*state adopted)

	*BMM(I)	EM(A)	*SRA(1)	RA
pages	69,332 333,336	34-39 55,60	47-55 195-216	14,15

Sequence, Strategies, Sources (continued)

13. Add any five numbers of 3 digits or less

Simple word problems based on topics such as sports (home runs, basketball scores, etc.) dating (tickets to dances), automobiles (mileage, horsepower, etc.) are appropriate here.

Don't forget to use drill and practice cards from the McCormick-Mathers or Singer lab kits.

Estimate answer by rounding to nearest 1,000 and/or 100 prior to calculating.

Student should change numbers in horizontal format to a vertical format before calculating.

14. Problem solving

For an excellent collection of activities concerning the use of tables in problem solving, see EIMI(2), pages 24-68.

Vocabulary should be kept at a minimum.

The skills developed up to this stage should be involved in random order.

Include problems involving order and units of measure.

References
(*state adopted)

	*BMM(I)	RA	*SRA(1)	EM(A)	EM(B)	EIMI(2)
pages	33-38 55-57 331,333, 335,341- 342 30,42	15,16 20	15,16 42,5	10,11 20-22 41,59,61	9,10	24-68

15. Student formulated verbal problems from a given set of facts

A set of facts can be given in a table or in a picture with directions to use the operation of addition. For example:

Write a verbal problem for each set of facts.

a. New car tests

	Mileage
car 23	116
car 61	83
car 8	298
car 44	9
car 1	403

b.

Movie Tickets	
Adults	$ 3.00
Students	$ 1.75
Child	$ 1.00

The answer is $ 8.75.

c.

Hav-Fun Sport Shop	
1 baseball bat	$ 6.50
1 glove	$ 8.98
	$15.38
tax	.62
Total	$16.00

d.

Team Member	RBI for 5 games (runs batted in)
John	3
Joe	11
Ollie	9
Jake	7
Doug	2
Other members	0
Team total	

Sequence, Strategies, Sources (continued)

16. Subtracting 2 one-digit numbers

Show the analogy that

$8 - 3 = \square$ is the same as $3 + \square = 8$

Fill in the squares:

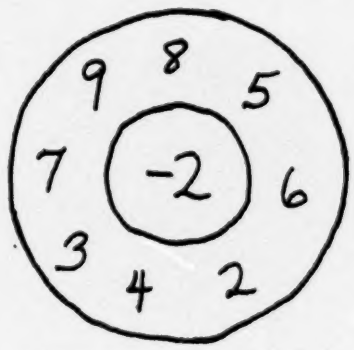
$7 - 2 = \square$

$7 - \square = 5$

Open-end problems provide for student creativity.

$\square - \square = 6$

"Donut-Drill" may be more fun than regular drill cards.



Introduce the special case of subtracting "0."

The number line is helpful in developing understanding.

References
(*state adopted)

	*SRA(1)	*BMM(I)	EM(A)	RA
pages	59-68	28,29 330,334	42-43 46-56	24-25

Sequence, Strategies, Sources (continued)

17. Subtracting a one-digit from a two-digit number (without borrowing)

Use place value and expanded notation emphasizing thatnumbers must be lined up properly with one's place under one's place, etc.

See SRA(1), page 68, for some ideas concerning simple number puzzles which can be constructed for drill.

18. Subtracting 2 two-digit numbers (without borrowing)

Use regrouping to develop a clear understanding of what is happening.

Later skill drill should be done <u>without</u> regrouping.

Involve a few verbal problems.

References
(*state adopted)

	*BMM(I)	RA	*SRA(1)
pages	28-29 334	25	57-62 66-68 221-223

Sequence, Strategies, Sources (continued)

19. Subtracting a one-digit from a two-digit number (borrowing)

Regrouping is needed to explain "borrowing."

20. Estimating by rounding off to nearest 10

After some experience with subtraction, estimating should be encouraged. Student should guess the answer and then calculate it.

Distance problems can be interesting. For instance:

> In high jumping, Jane's record jump was 38 inches but Mary could only clear 33 inches. How much higher did Jane jump? If Lula jumped exactly one yard, whose record was she closest to?

References
(*state adopted)

	*SRA(1)	*BMM(I)	RA	EM(C)
pages	221-226	71,330 337	25,26	46

Sequence, Strategies, Sources (continued)

21. Subtracting 2 two-digit numbers with borrowing

Emphasize regrouping and correct alignments.

Problems stated in horizontal format should be rewritten by the student in a vertical format before calculating.

Encourage estimation of answers before calculation.

22. Checking subtraction by adding

Show that

$$8 - 3 = 5$$

can be checked by the following addition:

$$5 + 3 = 8$$

- Give a set of completed subtraction problems, and have students check the answers by addition and correct any incorrect answer.

References
(*state adopted)

	*BMM(I)	*SRA(1)
pages	74	222-223

Sequence, Strategies, Sources (continued)

23. Subtracting any two numbers of 5 digits or less

Include problems which

a. Have zeros in the minuend
b. Have zeros in the subtrahend
c. Are given in horizontal format
d. Have zeros in both the minuend and subtrahend
e. Require "borrowing"

24. Solving verbal problems which involve subtraction

Include problems of very limited vocabulary which involve

a. Subtraction skills at various levels of difficulty
b. Order or comparison of numbers
c. Measurement of distance, time, height, etc.

25. Solving verbal problems which involve addition and subtraction

References
(*state adopted)

	*BMM(I)	RA	*SRA(1)
pages	39-40 334,337 339,340 42,64	26-30	224-226

26. Student formulated verbal problems from a given set of facts

A set of facts can be given in a table or in a picture with directions to use either addition or subtraction or both. For example:

a.

	Weight	
	Before	After
May	75	67
George	132	105
Terry	80	77
Allen	99	83

Use subtraction and "more than."

b.

	Team A		Team B	
	Won	Lost	Won	Lost
August	2	1	1	1
September	3	0	1	2
October	5	2	4	3

Use "less than," addition, and subtraction.

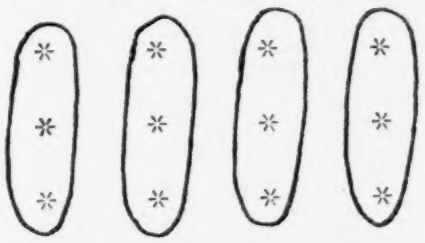
c. Use addition and subtraction. Expenses: band, $150, tickets, $5; rental of hass, $50; decorations, $25. Receipts: $400.

27. Multiplication - an introduction

See SRA(1) and EIMI(1) for work to precede the making of a multiplication table.

Help students to build a multiplication table step by step <u>after</u> they have had experiences designed to develop insight into the process of multiplication.

Explain and present problems which show multiplication as being related to addition.



4 groups of 3

4 x 3 = 12

3 + 3 + 3 + 3 = ☐ x 3 = 12

Introduce basic vocabulary: product, multiplier, factors.

<u>References</u>
(*state adopted)

	*BMM(I)	EM(A)	EM(B)	AT	RA	*SRA(1)	*EIMI(1)
pages	98-99	89-93 110-114 118-120 129	10,11 14-17	April '69 253,311 Nov.'70 617 May '69 397	32-33	80-101	70-102

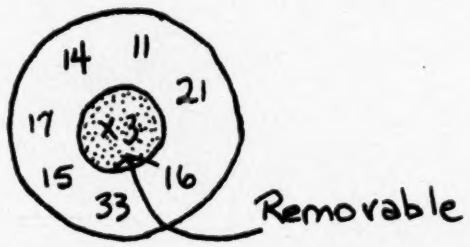
28. Multiplying a two-digit and a one-digit number with "carrying"

Some activities to include:

a. Special cases of multiplying by 1 and 0.
b. Finding the missing number

$\square \times 3 = 12$

c. "Donut-Drill"



Show that a product can be found in at least 2 ways:

$$\left.\begin{array}{r} 24 \\ \times\ 3 \\ \hline 12 \\ 60 \\ \hline 72 \end{array}\right\} \left.\begin{array}{l} 3 \times 4 = 12 \\ 3 \times 20 = 60 \end{array}\right\} \text{add} \quad \left.\begin{array}{r} 24 \\ \times\ 3 \end{array}\right\} = \left.\begin{array}{r} 20 \\ \times\ 3 \\ \hline 60 \end{array}\right. + \left.\begin{array}{r} 4 \\ \times\ 3 \\ \hline 12 \end{array}\right\} = 72$$

Begin estimating answers prior to calculation.

Distance - time problems are appropriate and can be interesting.

29. Multiplying a three-digit number by a one-digit number (with "carrying")

References
(*state adopted)

	*SRA(1)	*BMM(I)	EM(B)	RA
pages	108-115 227-233	186-188 200-201 348	24	33

Sequence, Strategies, Sources (continued)

30. Multiplying 2 two-digit numbers; estimating answers

Student may need to exhibit the work by place value, for example:

$$\begin{array}{r} 23 \\ \times\ 41 \\ \hline 3 \\ 20 \\ 120 \\ 800 \\ \hline 943 \end{array} \quad \begin{array}{l} = 1 \times 3 \\ = 1 \times 20 \\ = 40 \times 3 \\ = 40 \times 20 \end{array}$$

Encourage estimation prior to calculation.

3. Multiplying any 2 numbers of three digits

References
(*state adopted)

	EM(B)	RA	*BMM(I)	AT
pages	22,23 33	34-37	196-199 204,205 347-349	March '70 236

Sequence, Strategies, Sources (continued)

32. Solving verbal problems involving multiplication of up to three-digit numbers

    Select problems which contain

    a. Limited vocabulary

    b. Inequalities, as well as equalities

33. Solving verbal problems involving

    a. Addition and multiplication
    b. Subtraction and multiplication

References
(*state adopted)

	*BMM(I)	EM(B)	EM(C)	RA
pages	189.191 194	28,29 31.37	66,67	38,39

34. Formulating a student-made verbal problem involving addition, subtraction, and multiplication

Student will be given

a. Data which may or may not include thousands
b. Operation(s) to be incorporated

This is a good place to discuss the formulas $D = R \times T$ and $V = l \cdot w \cdot h$ so student may use them as bases for writing problems.

Given an object to measure and a formula to be used, the student may construct a suitable verbal problem. For instance, given:

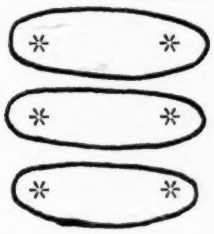
Object	Formula
rectangle	$P = 2(l + w)$
2 rectangles	$A = b \cdot h$
box	$V = l \cdot w \cdot h$
circle	$C = \pi d$
cylinder	$S = (2 \pi r \cdot h) + (2 \pi r \cdot r)$

Sequence, Strategies, Sources (continued)

35. Division - an introduction

Some activities to precede use of multiplication table:

a. Use of grouping in division:



6 stars separated into
3 groups → 2 in each group.

$6 \div 3 = 2$

b. Show relationship between multiplication and division

$4 \times 3 = 12$ $\quad 12 \div 3 = 4$ $\quad 12 \div 4 = 3$

c. Present charts for students to complete:

$3 \times 5 = 15$	$15 \div 5 = 3$	$15 \div 3 = 5$
$4 \times 7 = 28$	$28 \div 7 = 4$	$28 \div 4 = ?$
$6 \times 2 = 12$	?	?

d. Show that these all mean the same

(1) 8 divided by 4
(2) $8 \div 4$
(3) $4\overline{)8}$

e. Introduce basic vocabulary: quotient, dividend, divisor, remainder.

References
(*state adopted)

	*SRA(1)	EM(A)	EM(B)	AT
pages	102-106	138,139	38-43 45-48	Nov.'70 617

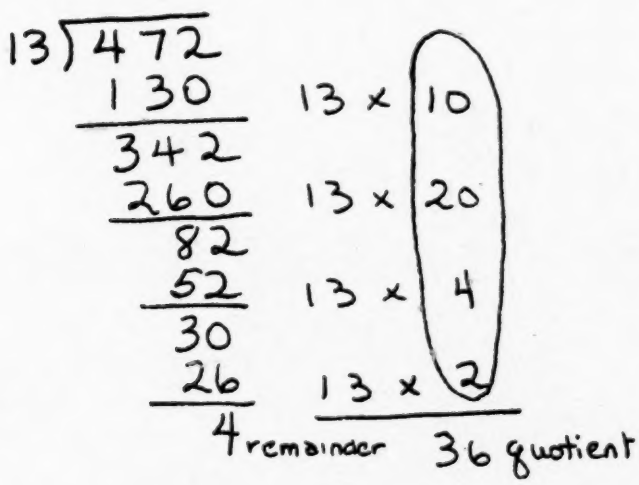
Sequence, Strategies, Sources (continued)

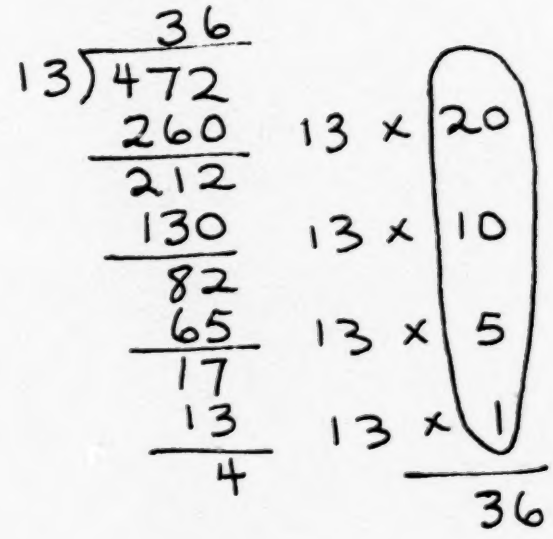
36. Division using a one-digit divisor and a two-digit dividend (checking answers)

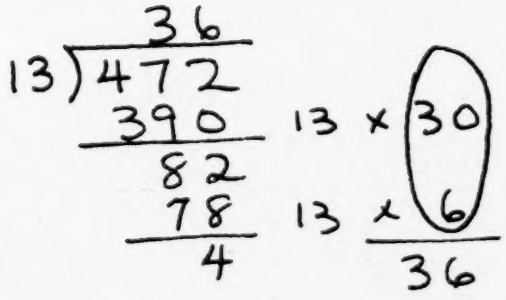
Include

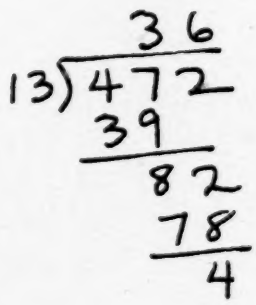
a. Renaming numbers for division
b. Special case of 1 as a divisor
c. Special case of 0 as a dividend
d. Practice with inequalities (See SRA(1) 239-240)
e. Using multiples of 10 in divisor (See SRA(1))
f. Checking answers by multiplication

A problem may be done in several ways (indicating increasing efficiency)









References
(*state adopted)

	*BMM(I)	EM(B)	RA	*SRA(1)
pages	114-115 121,130 208	50-52	42-43	234-238

Sequence, Strategies, Sources (continued)

37. Division
    a. One-digit divisor with a three-digit and four-digit dividend
        1. Without remainder
        2. With remainder
    b. Two-digit divisor with a three-digit and four-digit dividend
        1. Without remainder
        2. With remainder

It is important that students

a. Estimate answers before calculating

b. Use multiplication to check answers to problems with and without remainders

References
(*state adopted)

	*SRA(1)	*BMM(1)	EM(B)	EM(C)	AT	RA
pages	239-265	209,213 222-224 231,350 236-239	53-60 64,65 69	73-77	April '69 306	43-44

Sequence, Strategies, Sources (continued)

38. Solving verbal problems involving division only

39. Solving verbal problems involving:

    Addition and division
    Subtraction and division
    Multiplication and division

40. Formulating student-made verbal problems from a given set of data

    Student will be given

    a. Data which may or may not include ten thousands

    b. Operation(s) to be incorporated

        1. Division only
        2. Addition and division
        3. Subtraction and division
        4. Multiplication and division

    c. Formulas to use

        1. $R = \frac{D}{T}$
        2. $V = l \cdot w \cdot h$
        3. $P = 2(l + w)$
        4. $P = a + b + c$
        5. $A = b \cdot h$
        6. $h = \frac{A}{b}$

References
(*state adopted)

	*BMM(I)	EM(B)	RA	*SRA(1)
pages	116, 131 212, 230 232	61,79	48,49	266

Sequence, Strategies, Sources (continued)

41. Culminating activities

Select cross-number puzzles which require all four basic operations.

Make worksheets which contain a mixture of problems requiring skill in

a. Arithmetic operations

b. Measurement

c. Comparing sizes of numbers

d. Reading and interpreting word problems

e. Creating word problems incorporating each of the basic operations and order relations

Have students make a notebook of the worksheets above to show what they have accomplished this term.

Use class discussion to help students to conclude that whole numbers are not adequate for everyday life; thus, they must look to the next course in fractions or decimals as something that is urgently needed.

SAMPLE TEST

(This test may be used as both a pretest and a posttest.)

Circle the letter in front of the correct answer.

1.
```
  304
    8
  936
  167
+ 98
```
a. 1413
b. 1583
c. 1513
d. none of these
e. don't know

2.
```
 5016
-3449
```
a. 2669
b. 2567
c. 2457
d. none of these
e. don't know

3.
```
 497
x 96
```
a. 7,545
b. 47,712
c. 46,612
d. none of these
e. don't know

4. $9\overline{)7207}$
a. 800 r 7
b. 801
c. 800 r 17
d. none of these
e. don't know

5. 7 + 553 + 882 + 96 + 219 = ?

a. 1697
b. 1747
c. 1557
d. 1757
e. none of these

6. 43905 - 2749 = ?

a. 41,145
b. 26,515
c. 41,156
d. 40,056
e. none of these

7.
```
 70173
-60896
```
a. 10,723
b. 10,367
c. 10,767
d. 9,277
e. none of these

8. $63\overline{)4536}$
a. 75 r 11
b. 72
c. 70 r 36
d. none of these
e. don't know

9.
```
 390
x 207
```
a. 80,730
b. 10,530
c. 3,410
d. none of these
e. don't know

10. 456 + 9 + 123 + 903 + 203 = ?

a. 1694
b. 2585
c. 1704
d. none of these
e. don't know

11. 73000 - 831 =

a. 73831
b. 10900
c. 72169
d. none of these
e. don't know

12.
```
  76
  89
 302
 674
+ 90
```
a. 1230
b. 1221
c. 1229
d. 1231
e. none of these

13. Write the largest multiple of ten that makes this estimation true:

$7 \times ____ \approx 146$

a. 10 b. 7 c. 20 d. 30 e. don't know

14. Write the numeral that is 4 tens, 7 ones, 16 hundreds.

a. 4716 b. 1647 c. 160047 d. none of these e. don't know

15. Which is shorter, 1 foot or 25 inches?

a. 1 foot b. 25 inches c. neither d. don't know

16. Round to the nearest thousand: 2,756

a. 2,000 b. 3,000 c. 2,760 d. 2,800 e. don't know

17. If John worked 8 hours every day for 3 days, and 10 hours every day for 4 days, how many hours did he work during the week?

a. 18 b. 7 c. 21 d. 64 e. none of these

18. Six thousand, two hundred eighty

a. 6,208 b. 6,000,280 c. 6,280 d. 60,280 e. none of these

19. 9,347

a. nine thousand, three hundred, forty-seven
b. nine thousand, forty-seven
c. ninety-three, forty-seven
d. none of these e. don't know

20. Which digit of 906,532 is in the ten-thousands place?

a. 5 b. 6 c. 0 d. 9 e. don't know

21. Is 3 x 299 less than 600?

a. yes b. no c. don't know

22. Herman returned from space. On Earth he weighs 6 times as much as on the moon. He weighs 240 pounds on Earth. How much did he weigh on the moon?

a. 1440 b. 40 c. 60 d. 234 e. don't know

23. Estimate: $99\overline{)3965}$

a. 4 b. 400 c. 30 d. 40 e. don't know

24. 708 x 26 = _____. Give the answer rounded to the nearest hundred.

a. 18,000 b. 18,400 c. 21,000 d. 18,300 e. none of these

25. An ocean liner travels 300 miles a day. It uses 1 gallon of fuel for each 30 miles. How many gallons of fuel would be needed for a 10-day trip?

a. 1000 b. 10 c. 30 d. 100 e. don't know

ANSWER KEY

1. c	10. a	18. c
2. d	11. c	19. a
3. b	12. d	20. c
4. a	13. c	21. b
5. d	14. b	22. b
6. c	15. a	23. d
7. d	16. b	24. b
8. b	17. d	25. d
9. a		

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